

**Evaluation of Increasing Tagging Levels for Chinook Salmon and Steelhead and a
Demonstration Project on Mass Marking
Executive Summary**

a. Applicant Name: Northwest Marine Technology, Inc., Shaw Island, WA

b. Project Description and Primary Biological/Ecological Objectives

This project consists of two integrated components. The first component consists of three tasks designed to evaluate existing coded wire tag and recovery data from the Central Valley, look at hatchery produced salmon contribution to commercial and recreational harvest, and develop the parameters associated with constant fractional or mass marking programs for fish harvest. This report will also evaluate the potential for selective fisheries covering various geographic areas.

This project is also intended to demonstrate the feasibility of marking large number of fish for release into Central Valley waters. This project will coded wire tag and fin clip all chinook salmon smolt at the Merced River Fish Facility and Nimbus Hatchery, increase the percentage of chinook salmon tagged at Coleman NFH from 8% to 25%, and tag all yearling steelhead at Merced, Coleman, Nimbus, Feather River and Mokelumne hatcheries. This tagging will happen in 1999 and 2000 at 8.5 million fish per year. Tagging will be accomplished by using the automated, mass marking and tagging machines manufactured by NMT. Having large numbers of fish marked, provides numerous opportunities to change hatchery management and harvest management practices. In addition, inland selective harvests could occur on Nimbus Hatchery bound chinook salmon and steelhead from five hatcheries. Increasing the tagging levels will provide a much greater definition of juvenile salmon inland distribution, migration rates, growth rates and origin of fish captured in the multitude of sampling programs and diversion facilities. Uncertainties about endangered species take will be lessened.

c. Approach/Tasks/Schedule

Completing this project will consist of the development of a report which will compile and analyze existing hatchery and tagging information, as well as available statistics and computer models. The report will address tagging and sampling rates, tagging techniques and costs, and the pros and cons of selected fisheries. This approach will also use input from state and federal fishery managers and stakeholders.

Northwest Marine Technology will construct two mass marking machines, based on design of the current prototype machine that NMT developed for the Washington Department of Fish and Wildlife. A total of 8.5 million fish will be tagged each of two years. Tagging will occur at the facilities, at the levels, and on the schedules provided in the Scope of Work.

d. Justification for Project and Funding by CALFED

This project will provide a tremendous increase in the amount of information available to assess the effects of CALFED's ecosystem restoration activities. Increasing the number of fish marked in the system will also provide additional data to support CALFED's adaptive management program. Development of the report with respect to constant fractional marking and mass marking options will provide managers with the scientific basis to evaluate various potential selective fishery options.

Having additional fish, of known origin, available will allow many of CALFED's ecosystem restoration objectives to be assessed and or implemented. This type of project has been identified by both CALFED, in their ERPP, and by CVPIA's CAMP program as needs in the Central Valley. Category III is the logical funding source for this project since it is managed by a consortium of agencies involved in salmon and steelhead management in California.

e. Budget Costs and Third Party Impacts

The total cost for this three year project is \$1,875,500. Beneficial third party impacts will accrue to commercial and recreational fishermen, various sampling programs, and water project operations.

f. Applicant Qualifications

Northwest Marine Technology is uniquely qualified to accomplish this project since they have proprietary rights to the only automatic fish handling machine for marking and tagging, in the world.. They have assembled a team of cooperators that have extensive experience in dealing with salmon and steelhead management and the data associated with Central Valley salmon and steelhead populations.

g. Monitoring and Data Evaluation

Monitoring and data evaluation will be accomplished using existing agency programs for tag recovery. The report on constant fraction marking and mass marking feasibility will use accepted statistical and data analysis procedures.

h. Local Support/Coordination with other Programs/Compatibility with CALFED Objectives

This project is supported by CDFG and USFWS, whose hatcheries and tag recovery laboratories are involved. This project is fully compatible with all CALFED objectives.